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ABSTRACT

This paper explores the practical use of risk theory in assessing people's sense of risk in relation to proposed educational development projects. It considers questions such as: How is people's behavior toward a development project influenced by their perception of the risks and benefits implied in the project? How can information about people's perception of risk be collected and interpreted? How can such information be profitably used? Principal components of risk theory are described, including identifying the different types of needs, risks, and benefits that form part of the basis of the theory, understanding the difference between actual and perceived reality, salient features of education development efforts, the effect of consequences, psychological identification, and a practical decision-making algebra that uses opinion scaling. A sample interview composed of 11 questions is given along with reasons for each question and possible use of responses. Results are approximate at best because different people view reality and assess risk and benefit differently. However, this method of collecting and analyzing interviewees' responses yields a more helpful picture of their views of risks and benefits than that obtained from a project manager's casual, unorganized observations of project personnel, and thus it is more useful for modifying personnel's perceptions of risk. (Contains 22 references.) (RT)

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Applying Risk Theory to Educational Development

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Applying Risk Theory to Educational Development

People often try to improve the conduct of education by proposing changes. Such people include teachers, administrators, parents, school board members, professors, politicians, ministry of education officials, foreign aid personnel, journalists, and more. The projects they suggest can be labeled various ways—as *development, reform, innovation, renewal,* or *revival.*

The argument advanced in the following pages is founded on the proposition that how energetically people support or oppose a project is determined partially by the threat they believe the change could pose for their welfare. The set of convictions undergirding this argument is called *risk theory,* a conception helpful for interpreting the behavior of people involved in attempts at educational change. The theory's value derives from answers it provides for such questions as:

How is people's behavior toward a development project influenced by their perception of the risks and benefits implied in the project?

How can information about people's perception of risk be collected and interpreted?

How can such information be profitably used?

Educators who may find risk theory helpful are those who plan educational change, those who appraise the progress of a change during its implementation, and those who analyze intended change after it has been attempted. The theory can be applied to any sort of educational endeavor, ranging from the macro level (proposed academic-degree equivalency among countries or a proposed new nationwide science curriculum) to the micro level (changes in discipline rules in a single school or the hiring of two teacher-aides for a particular classroom).

Although rarely, if ever, has risk theory formally been applied in the field of education, versions of risk theory in other realms of decision-making abound. Perhaps the most common are variants intended for financial and business interests, such as the insurance industry (Abraham, 1986; Chikan,

1991; Daykin, 1994; Farnham, 1994) and international monetary entities (Jacque, 1978; Levich & Wihlborg, 1980). Other varieties reflect cultural (Douglas, 1992), moral (Thomson, 1986), sociological (Clark & Short,1993; Heimer, 1988; Luhmann, 1993), or disease-prevention (Morrison, Gillmore, & Baker, 1995) perspectives. Risk theory may also sail under other banners, such as *risk-aversion theory* (Arrow, 1971), *decision theory* (Bacharach & Hurley, 1991; French, 1986), *prospect theory* (Weyland, 1996), and *theory of choice under uncertainty* (Arrow, 1971; McCall, 1982).

The version offered here is designed for analyzing people's sense of risk in relation to proposed educational innovation, reform, or development projects. Throughout this discussion, the word *educational* refers to any formal or informal effort to alter people's knowledge, skills, values, or attitudes. *Development* means planned change (rather than accidental change) in an intended direction. Other terms that carry the same meaning as *development* include *improvement, innovation, reform, renewal,* and *renovation.*

The following description of the theory is presented in two parts. The first part depicts its main components. The second part illustrates a technique for revealing people's impressions of both the risks and benefits perceived in an educational-development proposal.

Principal Components of Risk Theory

This rendition of the theory, cast in the form of assumptions and postulates, is described in terms of characteristics of individuals and their environment that affect their risk and benefit estimates when confronted with an educational-change proposal. Such characteristics include people's needs, their perceptions of reality, salient features of educational-development efforts, the influence of consequences, psychological identification, the decision-making process, and individual differences in such characteristics.

Needs, Risks, and Benefits

All human actions represent people's attempts to satisfy inborn and acquired needs. One of the most important needs is for self-protection, what Henry Murray (1938) called the need for harm-avoidance and blame-avoidance. In the service of these needs, people are ever alert to identify and avoid threats to their physical, mental, or social well-being. A reciprocal of the need for self-protection is the need for self-enhancement, for promoting one's sense of security and competence. Thus, people are also alert to take advantage of opportunities that might promote their welfare.

For purposes of need fulfillment, needs become translated into goals to pursue. Thus, any educational development project can be perceived as either fostering or hindering progress toward a person's goals—or, as is often the case, of promoting certain of an individual's ambitions and frustrating others.

Risk refers to the likelihood that undesirable consequences will result from an action—that the person will suffer some sort of loss. In the present context, undesirable consequences are harmful results that people believe they might suffer from an educational development proposal. *Benefit* or *positive potential* is the opposite of *risk*. Benefit refers to the likelihood that personally desirable consequences will derive from a development effort.

Losses can be of various kinds, with some kinds considered more important than others. The question is: What exactly do people fear is threatened if an educational development plan succeeds or, on the other hand, is attempted and fails? For example, to what extent are people afraid of risking their:

—General psychological wellbeing (fear mental anguish, inability to concentrate, loss of sleep)

—Good reputation (fear social rejection, loss of others' trust and confidence, damaged public image, getting a "bad name")

—Freedom from blame (fear feelings of guilt and shame)

—Self-confidence (fear losing courage, self-respect, initiative, willingness to take chances)

—Occupational security (fear demotion, dismissal, reduced potential for advancement)

—Financial well-being (fear loss of funds, loss of opportunities for financial gain, loss of a good credit rating)

—Physical well-being (fear pain, reduced mobility, diminished energy, incapacitation)

Perceived Reality

The word *reality*, as used here, refers to the conditions of a real world that exists outside people's minds. Such a reality is not automatically and accurately reproduced in people's minds. Instead, each person's conception of reality is fabricated from that individual's experiences with the world—from the way the person's perceptual mechanism has fashioned a mental map of reality derived from life's encounters. The map can be called *perceived reality* or *constructed reality*. Because people have not had identical experiences, their mental maps are not identical but are, at best, only approximately alike.

People do not behave on the basis of the conditions of the real world but, rather, on the basis of their conception of that world—their *perceived reality*. They act on their convictions about what is real (Lewin, 1942, p. 217).

Salient Features of Educational Development Efforts

Important factors in an individual's perceived reality include the characteristics of the particular reform proposal that the person views as salient for the likely risk involved. Each of the characteristics can be defined as a dimension or scale, so that a given development project can be located at a suitable point on each scale; and hypotheses can be offered about the extent of risk that can be expected at different places on each scale. The scales, defined in terms of their extreme opposite ends, are as follows:

Intimate versus remote: This dimension concerns how closely a person is involved with the development project. Closeness is judged by how crucial the person's actions are to the success of the project. The closer

the project is to the individual, the greater risk is may be expected to pose.

Simple versus complex: A simple proposal involves change in very few components of an educational operation. A complex proposal involves change in many components and their interrelationships. Complex changes are likely to threaten greater risk of success than simple ones.

Restricted versus massive: This variable refers to the quantity of people, facilities, and/or organizational structures that must be changed. The restricted/massive dimension overlaps, but is not identical to, the simple/complex dimension. The more massive a project, the greater the risk of failure of some of its aspects.

Short-term versus long-term: The term of a development proposal is judged by the length of time, in people's opinions, from the first stage of an innovation until the innovation will be securely in place. Other things being equal, shorter-term projects pose greater risk than longer-term ones, since longer-term projects offer more time for participants to learn their roles and for the solution of unanticipated problems.

Expensive versus inexpensive: "Expense" refers to the monetary cost of personnel and facilities required for effecting the intended change and for sustaining it in its new form. The lower the cost, the less the risk of failure.

In people's perceptions of a change proposal, their estimates of risk and potential are influenced by how they think these five dimensions interact. Complex, massive changes may be seen as requiring a long-term plan and large expense; consequently, greater risk is perceived in complex, massive projects than in those represented as short-term, inexpensive efforts. A limited change with which an individual is to be closely involved may be perceived as a low-risk venture if the individual sees himself or herself as well equipped to effect the change.

The Effect of Consequences

People's perceived reality and behavior are heavily influenced by the consequences they experience in their dealings with the world. When the consequences following an action are interpreted as painful or unpleasant, the person is prone to avoid acting the same way in the future. When consequences accompanying an action are interpreted as pleasant and rewarding, the individual is apt to repeat that same action on future occasions (Skinner, 1974).

Consequences can be experienced either directly or vicariously. A direct consequence is an outcome an individual either suffers or enjoys as a result of his or her own behavior. A vicarious consequence is an outcome an individual observes other people experience as a result of their actions (Bandura, 1986). We may vicariously participate in other people's experiences by directly witnessing educational-development events, by seeing portrayals of such events (documentary motion pictures), by reading accounts of events (written reports of educational innovations), or by being told about events and their consequences (advice, lectures, and stories about development activities).

From such direct and vicarious experiences, people accumulate the portions of their perceived reality that relate to educational-development efforts. Hence, each person's current mental map of reality includes the expected risks and benefits which that individual has compiled up to the present time. People use these expectations for predicting likely future consequences as they decide how to act toward educational-development proposals that come their way.

Identification

A person's sense of security and well-being is not limited to consequences that affect her or him directly. Instead, an individual's sense of well-being is influenced as well by what happens to those individuals, groups, organizations, and belief systems with which the person links her or his fate. This extension of one's ego or sense-of-self to things beyond one's own body is

accomplished by means of the psychological mechanism of identification. The degree to which we psychologically identify with an entity (person, group, institution, belief system) is reflected in (a) how bad we feel when the entity suffers failure or ill treatment and (b) how good we feel when the entity enjoys success. Therefore, risks suffered by those entities with which we identify are experienced as threats to our own welfare, and potential rewards received by such entities enhance our own sense of well-being.

An Algebra of Decision-Making

According to risk theory, the mental process that people employ when choosing whether—and how strongly—to support or oppose a development project involves an imprecise decision-making algebra. The variables included on the left side of the decision-making equation are the risks and potentials the particular person believes the proposed development project poses for her or his welfare. Risks are assigned negative values, and potentials are assigned positive values. The right side of the equal sign represents the person's attitude toward—and expected behavior toward—the development project.

$$(-\text{Risk}_1) + (-\text{Risk}_2) + (-\text{Risk}_3) + \text{Potential}_1 + \text{Potential}_2 = \text{Behavior in a project}$$

Each risk and each potential carries a particular value or weight in decision-making. The magnitudes of the risk-values and the potential-values are probability estimates—a person's impression of (a) how likely a given risk or potential will occur and (b) the gravity of each variable's consequences for the individual's well-being. Thus, the weight assigned to any variable is a combination of (a) an estimation of the probability that the expected risk or potential will actually occur and (b) the likely importance of the variable's consequences. A preponderance of negative values causes a person to oppose the project. A preponderance of positive values causes the individual to support the project. When the perceived risk-values equal the perceived

potential-values, a stalemate obtains, so the person cannot decide whether to endorse or to resist the development proposal. Furthermore, the greater the magnitude of risk over the magnitude of benefit, the more effort the person will exert to oppose—or to avoid participating in—the project under consideration. And the greater the magnitude of potential over risk, the more enthusiastically the person will endorse the project and work to implement it.

Individual Differences

Because people differ from each other in their needs and their perceptions of reality, their risk/potential equations relating to a particular educational-development proposal can be expected to differ from each other in several respects:

(a) In the number of risk/potential variables included in the equation.

(b) In the aspects of life that are the focus of the variables.

(c) In the weightings assigned to variables on the basis of (1) the estimated probability that a given consequence will occur and (2) the estimated importance of the consequence for the person's well-being.

Summary

According to risk theory, a person's opinion of an educational-development project is the product of a decision-making algebra that weighs perceived risks against perceived positive potentials to determine how the project may affect the well-being of that person or the well-being of organizations or people with whom that person identifies. The algebraic computations in which one individual engages will be somewhat different from those of another person because of the differences among people in(a) their needs (b) the role they would be expected to fill in the project, and (c) the ways they have learned to perceive reality.

Applying Risk Theory

It is now appropriate to ask for answers to a pair of questions: How can risk theory serve as a guide to discovering people's perceptions of a educational-

development proposal? What practical use can be made of the information acquired about such perceptions?

Apparently it is never possible to identify the exact algebraic process people employ in arriving at their opinions of a educational-development effort. We cannot even precisely describe our own risk-cognitive-algebra because, in making decisions, we are not entirely aware of (a) the risk-variables and potential-variables that enter our appraisals, (b) the weightings assigned to those variables, or (c) our method of combining variables to produce a final judgment. And if we cannot unerringly assess our own method of arriving at a risk estimate, we are in even worse shape in trying to judge someone else's risk-computation process. Nevertheless, I believe the components of risk theory can be used to construct at least an approximate picture of that process, a picture that has some practical value.

The task of producing such a picture consists of identifying questions to be answered by people who participate in a development project. Answers can be compiled from interviews, from questionnaires, or from inferring people's beliefs from their actions. The following example illustrates one version of an interview approach.

The Questions

This illustrative interview approach is intended for use at the time a development project is about to be implemented. The questions are asked of people who are expected to participate in the project or at least to be affected by it. The material within the parentheses following each question identifies (a) the interviewer's purpose in asking the question and (b) suggestions about how answers might be useful to projects' advocates or to projects' opponents.

The interview can begin with a brief explanation of its purpose: "As this project [*identify the development proposal*] is being launched, it's helpful to know what various concerned people see as the project's likely risks and benefits. So we're asking your help in identifying risks and benefits. These ten questions give you a chance to express your opinion."

Question 1: What role are you expected to play in the project? That is, what are you expected to do? (*Question's purpose*: To learn respondents' perceptions of their responsibilities in the project. *Answer's usefulness*: Respondents' opinions about risks and positive potentials may be affected by how clearly they perceive what their participation in the project will entail. In addition, if respondents' conception of their role is not the same as that of the directors of the project, then the interviewer may wish to clarify the discrepancy. That explanation is likely to influence the respondent's perception of risks and positive potentials.)

Question 2: How is your work in the project different from what you were doing before the project started? In other words, what changes do you need to make in your usual duties in order to carry out your new responsibilities? (*Question's purpose*: To discover how great a change from the respondent's past activities will apparently be required by the project. *Answer's usefulness*: The greater the change, the more likely respondents may see risk in their participation.)

Question 3: How did you become involved in the project? (*Question's purpose:* To determine whether the person volunteered for the project or was assigned to it. *Answer's usefulness:* Volunteers may see less risk than do conscripts.)

Question 4: Are you glad to be involved in the project, or would you rather not be part of it? And why? (*Question's purpose:* To reflect the person's apparent enthusiasm for taking part in the project. *Answer's usefulness*: The greater people's enthusiasm, the less risk they apparently see risks and the more conscientiously they will likely participate. Their answer to the follow-up question of "why" should reflect both positive potentials and risks respondents see in their participation.)

Question 5: How might the project benefit you personally? That is, what do you get out of the project in terms of money, time, professional advancement, satisfaction, or the like? And why? (*Question's purpose*:

To suggest consequences—in terms of benefits—that respondents expect from the project. *Answer's usefulness:* The interviewer can estimate the number, kind, and strength of positive potentials in a participant's cognitive algebra. An interviewer who is an advocate of the project may also suggest other potentials for the respondent to consider. If the respondent agrees with those suggested benefits, the positive consequences included in the individual's cognitive algebra are increased. An interviewer opposed to the project may cite reasons that the respondent's view of potentials is unduly optimistic, thereby perhaps reducing the number and strength of positive consequences in the respondent's subsequent calculations. The follow-up question "why" may elicit further expected benefits.)

Question 6: What loss might you suffer from participation in the project? I mean, in what ways might you be worse off for taking part? Would there be no threat to your welfare, or moderate threat, or great threat? And why? (*Question's purpose*: To how respondents feel their well-being might be endangered. *Answer's usefulness*: The interviewer can estimate the number, kind, and strength of risks in a participant's cognitive algebra. An interviewer who believes the project is unwise may also suggest additional hazards for the respondent to consider, and perhaps to agree with, thereby increasing the number of risks included in the individual's calculations. An interviewer who is a proponent of the project may propose reasons that the respondent's view of risks is unduly pessimistic. If the respondent agrees with those proposals, the number and strength of potentials in the respondent's subsequent reckoning may be increased. The follow-up question "why" may elicit further expected risks.)

Question 7: What other people are involved in the project? (*Question's purpose*: To learn how well the respondent knows who else will participate. *Answer's usefulness*: By discovering the names of other participants that the respondent knows, the interviewer may be able to (a)

elicit further risks and benefits from the respondent and (b) learn how the respondent compares his or her own expected risks and benefits with those of other participants.)

Question 8: What benefits do you think the project offers [*name of a participant that the inwerviewee has identified*]? I mean, what does [*name of participant*] look to gain from taking part in the project? (*Question's purpose*: To reveal interviewees' opinions about how the project may enhance others' welfare. If any of those expected advantages are ones interviewees did not cite for themselves earlier, the interviewer can ask, "Is that benefit also one you would receive?" *Answer's usefulness*: Asking about benefits the project offers others may reveal desirable consequences that respondents failed earlier to identify for themselves, consequences which—now mentioned—are recognized as benefits they themselves would also enjoy.)

Question 9: What risks does the project pose for [*name of a participant that the inwerviewee has identified*]? I mean, what might [*name of participant*] expect to lose from taking part in the project? (*Question's purpose:* To reveal an interviewee's opinion about how the project may risk others' well-being. If any of those expected disadvantages are ones interviewees did not cite for themselves, the interviewer can ask, "Would that disadvantage also be true for you?" *Answer's usefulness*: Asking about risks the project seems to hold for other people may elicit unwanted consequences that respondents failed to identify earlier for themselves, consequences which—now mentioned—are recognized as harm they themselves might suffer.)

Questions 8 and 9 may be repeated several times, each time focusing on a different a participant that the inwerviewee identified.

Question 10: Do you think the project will benefit students? I mean, how will the learners be better off because of this project? (*Question's purpose*: To discover what respondents see as the contribution the project is likely to make toward the ultimate product of the education system,

that is, toward student success. *Answer's usefulness*: The question assumes that respondents identify with students and thus feel good about improved student learning and feel bad about damage students might suffer as a result of the project. Thus, respondents can feel that benefits to students indirectly enhance their own welfare and that risks to students are indirect threats to respondents' own psychological well-being.)

Question 11: Do you think the project will harm students? I mean, how might the learners be worse off because of this project? (*Question's purpose* and *Answer's usefulness*: The same as for Question 10.)

In summary, the foregoing questions reflect several perspectives from which to elicit participants' beliefs about risks and positive potentials of the educational project under discussion. We turn now consider two method of analyzing respondents' answers in terms of risk theory.

Estimating Project Participants' Cognitive Algebra

As already noted, the intent of the interview is to collect information that permits an estimate of respondents' cognitive algebra in terms of (a) respondents' overall enthusiasm for the project and (b) which features of the project promise desired consequences and which pose risks to participants' welfare. It is apparent that such an estimate is imprecise, because (a) the interview questions may not elicit all of the expected risks and benefits that affect interviewees' decisions and (b) respondents may not be entirely candid in their replies. Furthermore, the importance that participants attach to different risks and benefits is difficult to determine. Nevertheless, I believe the following method of analyzing replies yields a more helpful picture of interviewees' views of risks and benefits than the picture that results from project managers' casual, unorganized observations of project personnel.

The estimate of a participant's cognitive algebra results from an analyst inspecting a record of a respondent's answers (written or audio-taped) to the

interview questions in order to calculate the number of risks and the number of benefits. The analyst may also be able to estimate which risks and benefits loom larger than others in the respondent's opinion. In other words, people's answers may suggest that some risks and benefits are more important to them than are others. A simple, rough way to accommodate differences in importance is to assign a weight of "1" to less significant risks and benefits and a weight of "2" to more significant ones. If the analyst finds it too difficult to distinguish levels of importance, than each risk and benefit may be counted as "1" . Thus, the analyst goes through the list of a participant's answers, tallying risks and benefits separately and computing the algebraic sum (risks minus benefits). We thus hypothesize that the higher the ratio of risks to benefits, the less likely the participant will enthusiastically support the project. And the higher the ratio of benefits to risks, the more likely the participant will work hard to see that the project succeeds.

Altering People's Perceptions

In addition to calculating a risk/benefit ratio, an analyst can compare (a) the participant's perception of risks and positive potentials with (b) the analyst's own perception. The analyst may conclude that some of the interviewee's answers reflect a faulty view of reality, a view that might be corrected if the interviewee had more accurate information. Thus, the respondent's answers offer an opportunity for the analyst to try changing the respondent's perception and thereby alter the risk/benefit ratio of the respondent's cognitive algebra.

This opportunity to change specific elements of a participant's thought process is available to both proponents and opponents of an educational innovation. Someone seeking to alter individuals' perceptions of risk can try to reduce their fear of loss by adding new positive information to those individuals' existing store of knowledge or by revising their interpretation of information they already possess. Or, in contrast, certain types of new infor-

mation or a revised interpretation of information will increase the person's sense of risk by suggesting potential losses that the individual had failed to recognize. Therefore, people who think a proposed innovation is undesirable and should be abandoned can use respondents' answers to interview questions as a guide to types of information that can increase a respondent's sense of risk and thus add to their impression that the proposed reform is either a bad venture that should be abandoned or else one that needs to be revised if it is to succeed.

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